

Title: **COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION**

First Named Inventor: **John M. Flack**

Application Serial No.: / Atty. Docket No.: **MTS 0102 PUS**

1/25

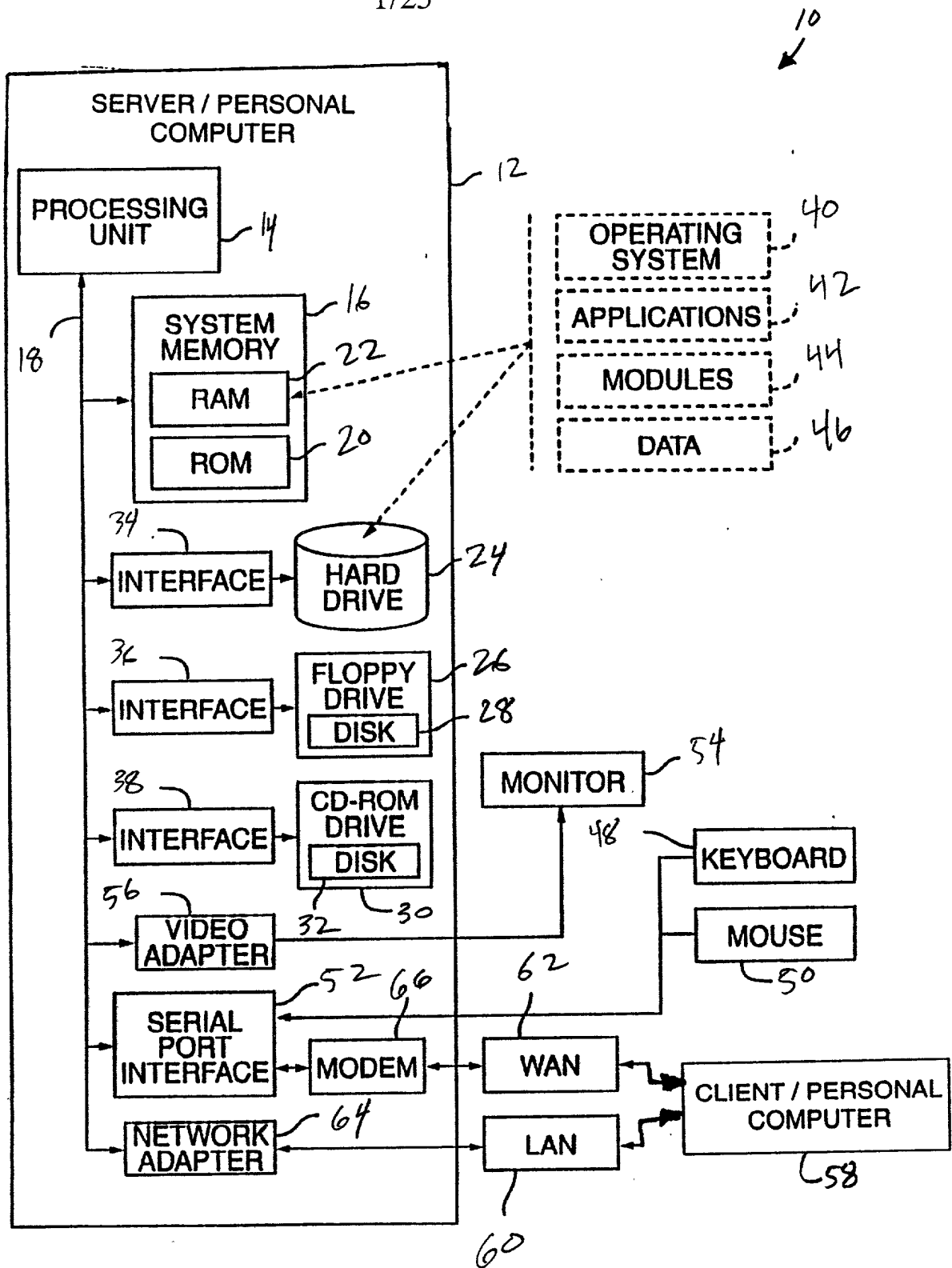


Figure 1

Title: COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
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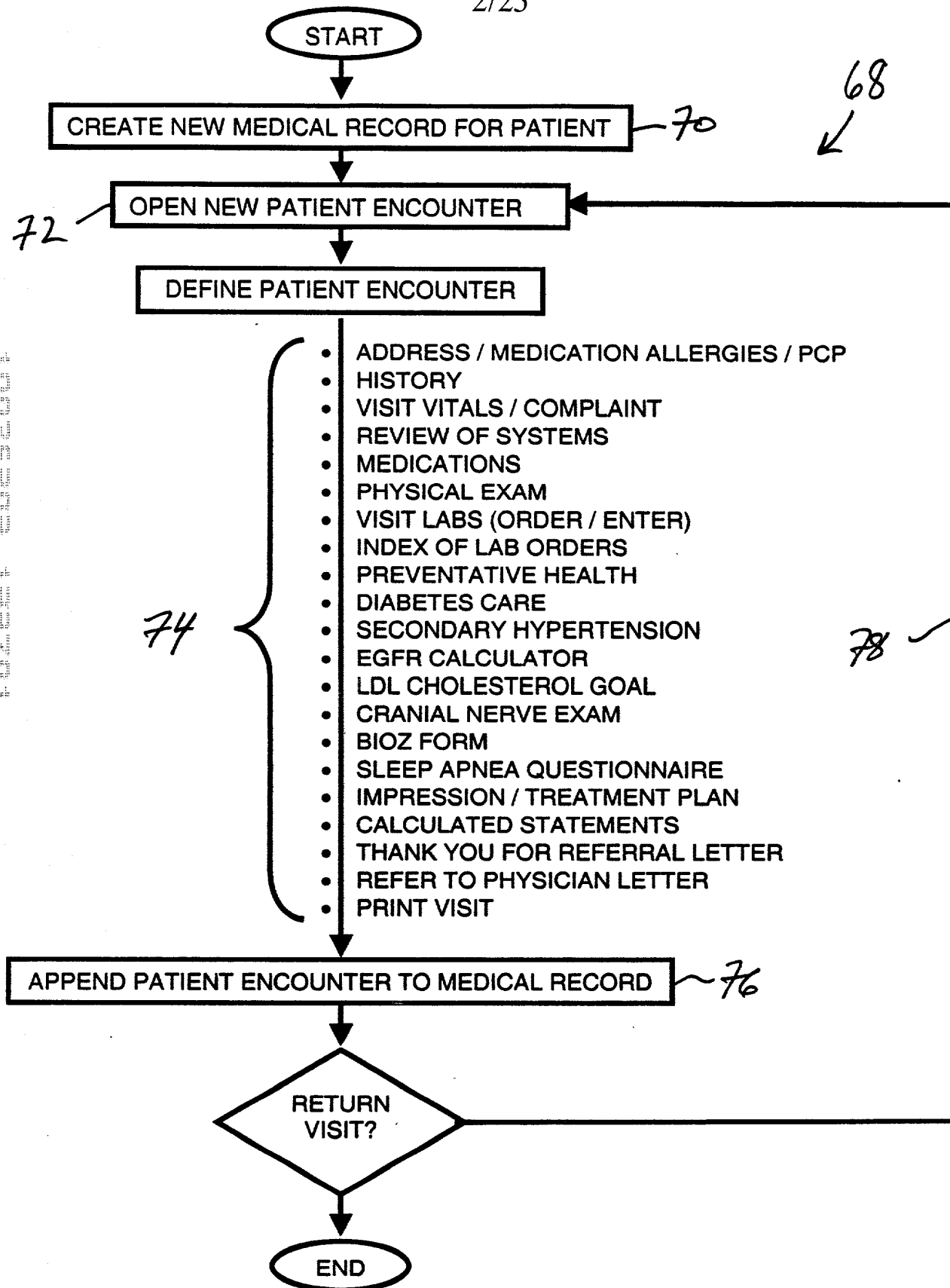


Figure 2

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Microsoft Access

File Edit Insert Records Window Utilities Add To List Medication Table Treatment Algorithms View Summary Help

Patient Information

82 84

Expired Chronic No Show Close

Patient Demographics Referring / Primary Physician Information

86

Last Name: Doe
First Name: John MI: A
DOB: 03/05/1925
Gender: Male
Race: African-American
Address: 123 First Street
City, State, Zip: Detroit MI 49380
Home Phone: (313) 123-5555 WK: (313) 123-2323
Email Address:

Medical Record Number: 99-99-99999
Social Security Number: 123-12-1234

Please select the physicians
this patient will or is currently seeing in this clinic:

Clinic Physician:
Flack, John M.
*

88 90 92

Drug Allergies:

94

Medication Allergies:
Sulfa Medication
Sulfamethaxazole
Sulindac/Clinoril
SuperEPA Softgels
Suprax
Surfak / Docusate Calcium
Surmontil
Survanta

98

Comments:
96

80

Fig. 3

Title: COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
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Patient Encounter Summary

Patient: Doe, John SSN: 123-12-1234

New Visit / Encounter to Add: Select Lab Visit:

View Encounter Type	Contact Date
<input type="checkbox"/> Initial Visit	01/03/1999
(most current visit listed first)	
<input type="checkbox"/> Telephone	12/12/2000
<input checked="" type="checkbox"/> Return	11/02/2000
<input type="checkbox"/> Telephone	10/16/2000
<input type="checkbox"/> Telephone	10/09/2000
<input type="checkbox"/> Telephone	10/07/2000
<input type="checkbox"/> Emergency Room	09/26/2000
<input type="checkbox"/> Telephone	09/10/2000
<input type="checkbox"/> Telephone	06/24/2000
<input type="checkbox"/> Telephone	06/23/2000
<input type="checkbox"/> Return	01/21/2000
<input type="checkbox"/> Nurse	01/11/2000
<input type="checkbox"/> Other	12/31/1999

Address / Medication Allergies / PCP

BioZ Form

Calculated Statements

Cranial Nerve Exam

Diabetes Care

EGFR Calculator

History

Impression / Treatment Plan

Index of Lab Orders

LDL Cholesterol Goal

Medications

Physical Exam

Preventive Health

Refer To Physician Letter

Review of Systems

Secondary Hypertension

Sleep Apnea Questionnaire

Thank You for Referral Letter

Visit Labs (Order / Enter)

Visit Vitals / Complaint

Print Visit

Delete Visit

Fig. 4

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MedTrace

File Edit Insert Records Window Add To List Medication Table Treatment Algorithms View Summary Help

Patient History Form

Patient Name: John Doe

SSN: 123-12-1234

Unlock/Edit History Outline Changed Fields Close

Blood Pressure: 120 / 122 / 124 / 116 / 126 / 118

Cardiovascular / Renal Family / Personal History Non-Drug Allergies

Yes ☒ Hypertension

Hypertension Diagnosis Date: [non-formatted date field]

Duration of hypertension: years:

Highest known systolic blood pressure: mm Hg:

Highest known diastolic blood pressure: mm Hg:

#ER visits for hypertension:

Last ER visit for hypertension: [non-formatted date field]

#hospitalizations for HTN:

Last hospitalization for hypertension: [non-formatted date field]

How many times per week do you forget to take your BP medication:

128

112 ↗

Fig. 5

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Initial Visit Form [Comprehensive]

Patient: Doe, John Close

SSN: 123-12-1234

Date of Visit: 01/03/1999

Presenting Complaint | Problem List | Visit Vitals | 134 144

Problem(s): Select from drop-down list choices here or use "Check Sheet" Check Sheet

Problems:	Comments:	Yes=Resolved, No=Continues:
Hypertension		
Dyspnea on Exertion	~1 block, probable cause emphysema	
Asthma		
*		

Other Problems: Enter free text in this section for problems not available above.

Problems (free text):	Comments:	Yes=Resolved, No=Continues:
Mild global dysfunction; EF 45-50%		
Valvular heart disease; mild AI, MR,		
Severe annular mitral calcification		
Ascites		
ant. mitral valve prolapse		

Fig. 6

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Initial Visit Form [Comprehensive]

Patient: Doe, John
SSN: 123-12-1234
Date of Visit: 01/03/1999

Presenting Complaint | Problem List | Visit Vitals

Height(in): 69 Weight(lbs): 166.5 BMI (kg/m2): 24.6 Pulse(bpm): 74 ☒ Regular
Resp/min: 18 Temp(F): 99 ☐ Irregular

Cuff to be used for visit BPs: large adult Arm to be used for visit BPs: Right

Seated Blood Pressures:			Standing Blood Pressures:		
Systolic:	Diastolic:	Arm:	Systolic:	Diastolic:	Arm:
156	90	Left	144	88	Right
160	96	Right			
*					

Open BP Trend Graph

BP Summary: Left Arm: 152 Right Arm: 154 156

Fig. 7

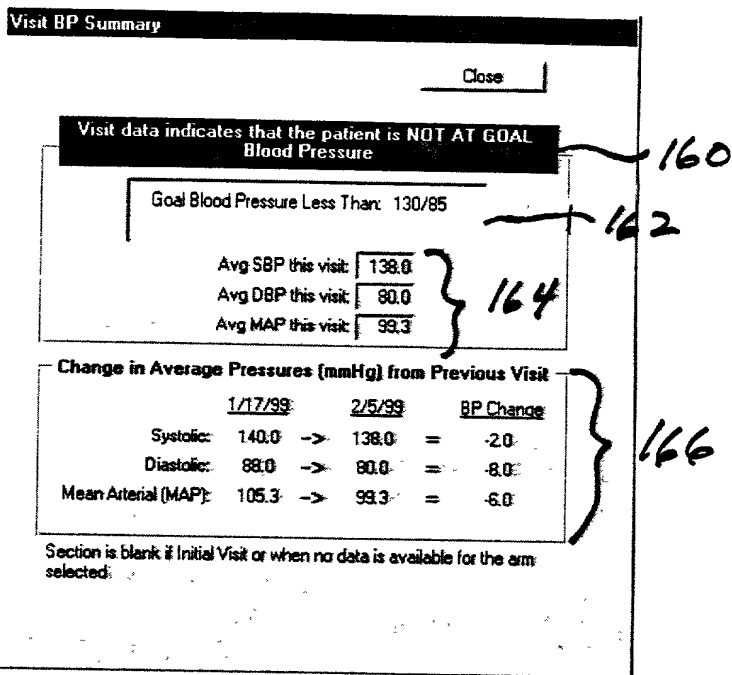
146

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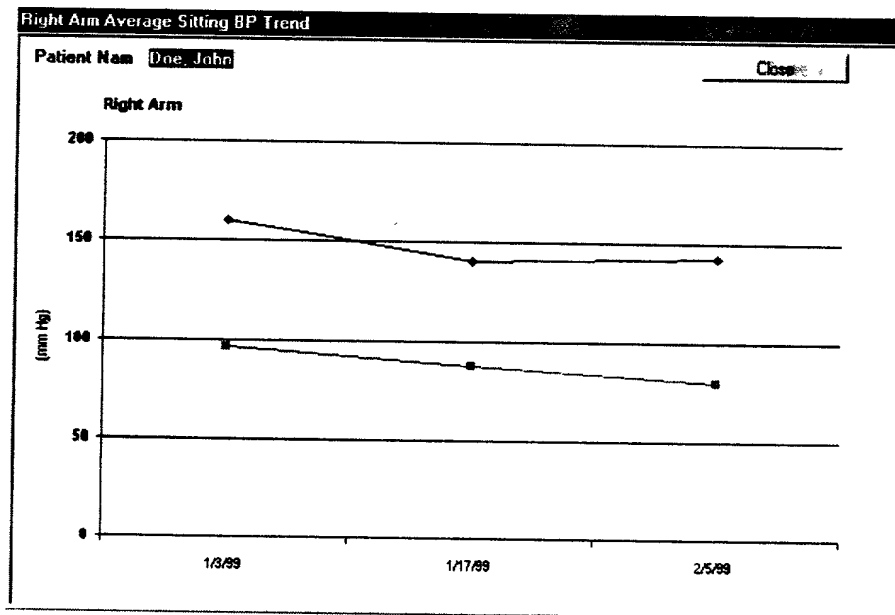
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Fig. 8



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Fig. 9

HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION

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Review of Systems																			
Patient: Doe, John				Unlock/Edit Form				Close											
SSN: 123-12-1234																			
Review Date: 01/03/1999				This Form is Currently Unlocked															
Neurological	Endocrine	Hematologic/Lymphatic		Allergic/Immunologic		Psychiatric		Reproductive											
Constitutional	Eyes	ENMT	Respiratory	GI	Genitourinary	Psychosexual	Musculoskeletal		Integumentary										
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 10px;">Positive</div> <div style="font-size: 2em; margin-left: 10px;">174</div> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="2" style="padding: 5px;">Constitutional</th> </tr> <tr> <th style="width: 35%; padding: 5px;">Finding</th> <th style="padding: 5px;">Comment (free text)</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Exercise Intolerance*</td> <td style="padding: 5px;">Out of breath after walking short distance</td> </tr> <tr> <td style="height: 150px;"></td> <td></td> </tr> </tbody> </table>												Constitutional		Finding	Comment (free text)	Exercise Intolerance*	Out of breath after walking short distance		
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Exercise Intolerance*	Out of breath after walking short distance																		

Fig. 10

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Medications Form

Patient: Doe, John.
SSN: 123-12-1234

190 Open Medication Summary Print Prescriptions 189 Close

Medication	Dose	Units	Freq	Prior V1	Start Date	Stop Date	Cont	#Refills	#Pills/Vials
Nephrocaps			1QD	Yes	01/01/1996		Yes		
Comment: He is unsure of dose Rx 182									
Accupril / Quinapril	10	mg	BID	Yes	05/15/1998		Yes	5	66
ACE inhibitor									Rx
* Acebutolol / Sental					11/08/2000		Yes		
Aceon Tablets									Rx
Acetamenophen									
Achromycin									
AcipHex / Rabeprazole Sodium									
Acro-Lase									

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Combination Medication Entry Tool: Enter combination medication info. and click the Append to Medication List button.

Combination Medication: Frequency: Start Date: Stop Date: Cont: Prior V1: Append to Patient Medication List

(required) (required)

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Fig. 11

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Physical Impression and Plan

Patient: Doe, John
SSN: 123-12-1234
Date: 01/03/1999

Close

General | HEENT | Neck | Lung | Heart | Musculoskeletal | Abdomen | Neuro | Breasts | Skin | Extremities | Rectal

Abnormal ~ 198

Abnormal Lung Findings:

- rales-equal R and L
- * Dullness to percussion
- rales L>R
- rales R>L
- rales-basilar
- rales-equal R and L
- rhonci
- wheeze-bilateral
- wheeze-end-inspiratory

Other Lung Findings (free text):

- involves one-quarter posterior lung fields bilaterally
- *

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Fig. 12

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Visit Lab Orders

Patient: Doe, John
SSN: 123-12-1234
Date of Visit: 01/03/1999

Close
Open Lab Visit for this Order

214

Current Lab Orders:

Lab Orders
Urine Albumin
Crea (Serum)
24hr Blood Pressure Monitor

208

212

Check Sheet:

Cancel Order	Order Checked Labs
<input type="checkbox"/> CBC	
<input type="checkbox"/> Cholesterol	
<input type="checkbox"/> CK	
<input type="checkbox"/> CPK	
<input checked="" type="checkbox"/> Crea (Serum)	
<input type="checkbox"/> CT scan-Head	
<input type="checkbox"/> Dietary: 1800 ADA Diet	
<input type="checkbox"/> Dietary: 2 gram sodium diet	
<input type="checkbox"/> Dietary: 2000 ADA Diet	
<input type="checkbox"/> Dietary: 2200 ADA Diet	
<input type="checkbox"/> Dietary: low fat / low cholesterol diet	

210

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Fig. 13

Lab Form

Patient: Doe, John
SSN: 123-12-1234
Date: 01/03/1999

Delete Print Close

Blood Results | Urine Results | Renal Artery Duplex Scan | Echocardiogram

Reference Ranges: Calculated Diagnoses/Comments:

BLOOD TEST RESULTS

Test	Value	Reference Range	Calculated Diagnoses/Comments
Fasting:	Yes		
Sodium:	(mmol/L)	135 - 145	
Potassium:	(mmol/L)	3.5 - 5.3	
Chloride:	(mmol/L)	95 - 110	
Carbon Dioxide:	(mmol/L)	20.0 - 30.0	
BUN:	(mg/dl)	7 - 20	
Creatinine:	1.2 (mg/dl)	0.6 - 1.2	EGFR: 53.0
Glucose:	110 (mg/dl)	70 - 110	(110-126= Impaired Fasting Glucose)
BUN / Crea ratio:		7 - 20	
Anion Gap:	(mmol/L)	5 - 20	
Bilirubin, Direct:	(mg/dl)	0.0 - 0.4	
Bilirubin, Indirect:	(mg/dl)	0.0 - 0.8	
Calcium:	(mg/dl)	8.2 - 10.6	

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Fig. 14

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lab_orders_index : Form

Order Date: 01/03/1999

Delete This Order

Close

Ordering Physician: Flack, John M.

Order Lab Tests From Sheet

Labs Available

Open Lab Visit for this Order

Test(s) Ordered:	Status:	ReOrder Date:
Urine Albumin	<input checked="" type="checkbox"/> Done <input type="checkbox"/> Not Done	
Crea (Serum)	<input checked="" type="checkbox"/> Done <input type="checkbox"/> Not Done	
24hr Blood Pressure Monitor	<input checked="" type="checkbox"/> Done <input type="checkbox"/> Not Done	
Lipid Profile	<input checked="" type="checkbox"/> Done <input type="checkbox"/> Not Done	
	<input checked="" type="checkbox"/> Done <input checked="" type="checkbox"/> Not Done	

Record: 1 of 1

Fig.15

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HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION

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Secondary HIN

Patient: Doe, John

SSN: 123-12-1234

Close

Renovascular Hypertension

Hyperaldosteronism

Pheochromocytoma

Cushing's Syndrome

Hyperthyroidism / Hypothyroidism

Renovascular Test:

Test Date:

Diagnosis:

Diag Date:

Actions Taken / Findings:

▶ Captopril Renogram

Location:

*

Location:

Lab Date: 01/03/1999

Right Kidney:

PSV RRA Origin: [] (<180 cm/sec)

PSV RRA Mid: [] (<180 cm/sec)

PSV RRA Distal: [] (<180 cm/sec)

RT Renal / Aortic Ratio: [] (<3.5)

Right Kidney:

Left Kidney:

PSV LRA Origin: [] (<180 cm/sec)

PSV LRA Mid: [] (<180 cm/sec)

PSV LRA Distal: [] (<180 cm/sec)

LT Renal / Aortic Ratio: [] (<3.5)

Left Kidney:

Record: 1 of 2

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Fig. 16

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EGFR Calculator

Patient: Doe, John Close

SSN: 123-12-1234

Always verify that the information below is accurate!

234 {

Age: (yr)

Sex:

Height: (in)

Weight: (lb)

Serum Creatinine: (mg/dl)

EGFR: 39.3

Note: Although the data imported is from the patient record, field changes made on this form are NOT stored in the patient record.

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Fig. 17

LDL Cholesterol Goal

Patient: Doe, John Close

SSN: 123-12-1234

Always verify that the information below is accurate!

Goal LDL: Less than or equal to 100 mg/dl

Age:

Sex:

Family Hx of CHD:

Smoking:

Hypertension:

CHD:

Diabetes:

HDL: mg/dl

LDL: mg/dl

*required field if CHD is "No!"

LDL / HDL Lab Results Summary:

DATE	FASTING	LDL	HDL
01/03/1999	Yes	150	60

240 }

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Fig. 18

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Impression / Treatment Plan

Patient: Doe, John
SSN: 123-12-1234
Visit Date: 1/3/99

Lab Orders

Urine Albumin
Crea (Serum)
24hr Blood Pressure Monitor

Close

Order Lab Tests From Sheet

Open Calculated Statements

Impression | Treatment Plan

Impression:

Gentleman with ESRD on peritoneal dialysis with HTN of unknown duration. His symptoms of dyspnea on moderate exertion point to the need to screen for systolic and diastolic heart dysfunction and, if systolic dysfunction is present, to consider combined hypertensive and ischemic cardiomyopathy. I suspect that he has some peripheral arterial disease and mild claudication symptoms. He is currently impotent, a problem likely secondary to his hypertension and radiation treatment for prostate cancer. Atherosclerosis also may be playing a role in his impotence. His cerebellar dysmetria is possibly linked to remote ETOH intake. Some of his breathlessness also may relate to primary pulmonary disease. Combined systolic and diastolic hypertension in a significantly overweight patient.

Other Visit Impression(s) for Patient Preformatted Statements (A) | Preformatted Statements (B) | Preformatted Statements (C)

Blood pressure elevation in a significantly overweight person who is not currently adhering to any lifestyle modifications and also discussed the long-term need for blood pressure medications if pressure levels do not come down.
Combined systolic and diastolic hypertension in a significantly overweight patient.
Consider possible sleep apnea, since patient is overweight and also gives Hx of snoring at night.
Diet is likely a problem by the patient's own admission.
Excellent blood pressure control, patient is at goal.
Excellent blood pressure response, however, still above goal. Patient has seen a dietician and is on a low-fat, low-salt diet.

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Fig. 19

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Impression / Treatment Plan																		
Patient: Doe, John SSN: 123-12-1234 Visit Date: 1/3/99	<table border="1"><thead><tr><th colspan="2">Lab Orders</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/></td><td>Urine Albumin</td></tr><tr><td><input type="checkbox"/></td><td>Crea (Serum)</td></tr><tr><td><input type="checkbox"/></td><td>24hr Blood Pressure Monitor</td></tr></tbody></table>	Lab Orders		<input checked="" type="checkbox"/>	Urine Albumin	<input type="checkbox"/>	Crea (Serum)	<input type="checkbox"/>	24hr Blood Pressure Monitor	<table border="1"><thead><tr><th colspan="2">Close</th></tr></thead><tbody><tr><td><input type="button" value="Order Lab Tests From Sheet"/></td><td><input type="button" value="Open Calculated Statements"/></td></tr></tbody></table>	Close		<input type="button" value="Order Lab Tests From Sheet"/>	<input type="button" value="Open Calculated Statements"/>				
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Fig. 20

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Diagnostic subform

 **Calculated Statements** Close

Meets criteria for HTN based on diabetes, CHF, CRI and SBP at least 130 or DBP at least 85 or on antihypertensive meds

It is prudent to wait ~4 to 6 weeks prior to titrating antihypertensive medications to maximize BP lowering and to minimize drug-related side effects.

Meets criteria for impaired fasting glucose based on lab results

For patients with ED: 1) if hypertensive, avoid thiazide diuretics, beta blockers (particularly older ones), and central adrenergic inhibitors. Favor use of alpha blockers. 2) Consider sildenafil (Viagra).

Preventive: Patients 50 years and older should have colonoscopy if primary relative has colorectal cancer and every 5 years after 2 negative exams.

Preventive: Patients 40 years and older should have stool checked for occult blood

Due to history of sulfa drug allergy, avoid thiazide diuretics or use them with caution.

Due to history of CHF, avoid use of thiazolidinediones and metformin.

In asthmatics with ASA sensitivity, non-acetylated salicylates (Trilisate, Disaloid, etc.) are less likely to cause severe bronchospasm & anaphylactoid reactions. However, these reactions may occur with any NSAID.

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Fig. 21

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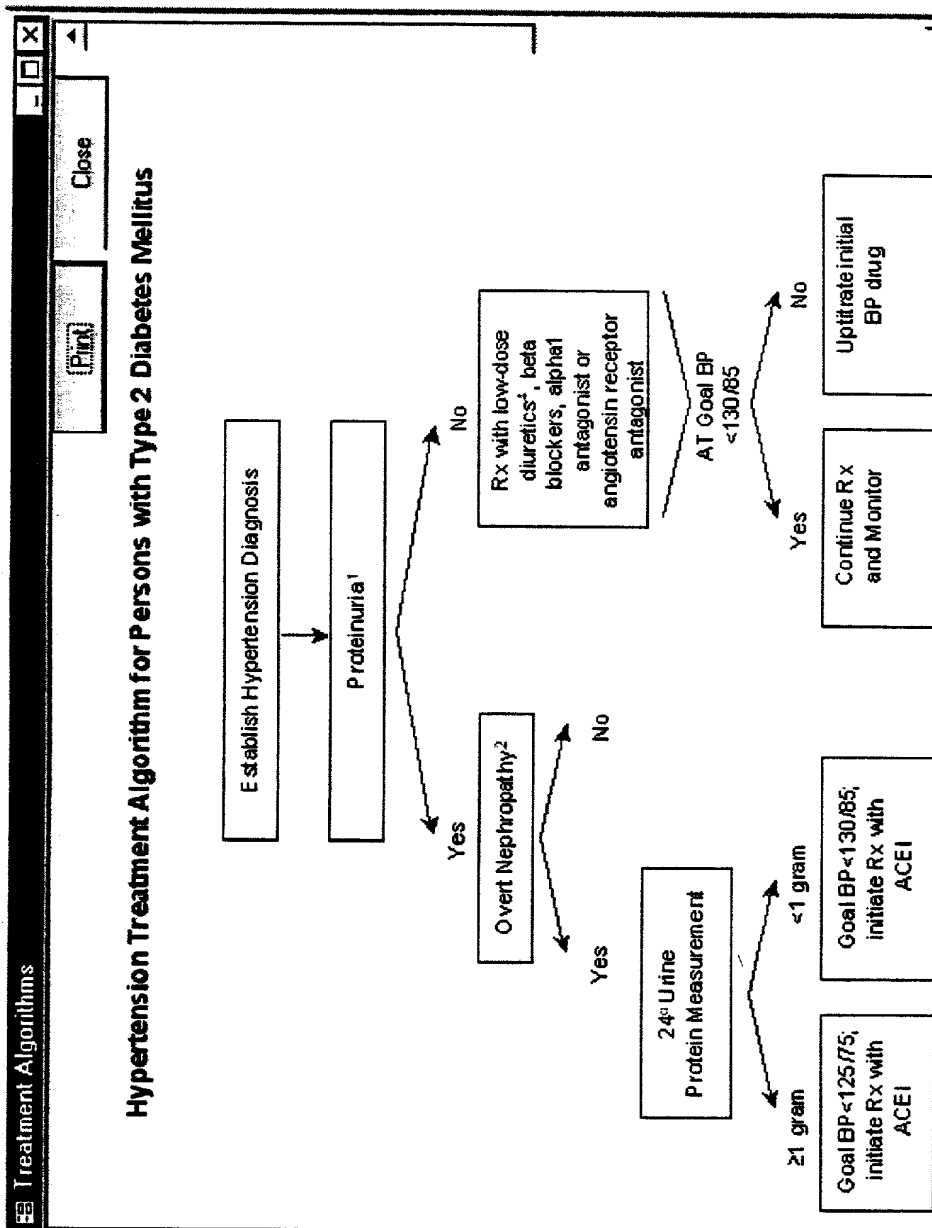


Fig. 22

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Title: **COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION**

First Named Inventor: **John M. Flack**

Application Serial No.: / Atty. Docket No.: **MTS 0102 PUS**

20/25

Possible Allergic Reaction!

Close

**THERE MAY BE POTENTIAL ALLERGIES TO THE FOLLOWING
CURRENTLY PRESCRIBED MEDICATION(S):**

HCTZ

Allergy category:

Sulfa Antibiotic

Recommendation

Close

It is prudent to wait ~4 to 6 weeks prior to titrating antihypertensive medications to maximize BP lowering and to minimize drug-related side effects.

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Fig. 23

Title: **COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION**

First Named Inventor: **John M. Flack**

Application Serial No.: / Atty. Docket No.: **MTS 0102 PUS**

21/25

Referral Letter Form

Wayne State University
Internal Medicine

RE: DOE, JOHN A.
Med Rec#: 123-12-1234

November 15, 2000

REFERRING PHYSICIAN INFORMATION:

First Name:	John	Address1:	4201 St. Antoine, Suite 7A
MI:	A	Address2:	University Health Center
Last Name:	Salameier	City:	Detroit
Degrees:	MD	State:	MI
Phone:	(313) 745-8000	Zip:	48201
Fax:	(313) 745-5545	Comments:	
Email:	jsalameier@intmed.wayne.edu		

Dear Dr. Salameier,

Thank you very much for your referral of John Doe DOB 3/5/1925 for evaluation. Attached is a copy of my clinic note.

IMPRESSION:

Gentleman with ESRD on peritoneal dialysis with HTN of unknown duration. His symptoms of dyspnea on moderate exertion point to the need to screen for systolic and diastolic heart dysfunction and, if systolic dysfunction is present, to consider combined hypertensive and ischemic cardiomyopathy. I suspect that he has some peripheral arterial disease and mild claudication symptoms. He is currently impotent, a problem likely secondary to his hypertension and radiation treatment for prostate cancer. Atherosclerosis also may be playing a role in his impotence. His cerebellar dysmetria is possibly linked to remote ETOH intake. Some of his breathlessness also may relate to primary pulmonary disease.

PROBLEMS:

Problem:	Comments:	Resolved
<input checked="" type="checkbox"/> Hypertension		
<input type="checkbox"/> LVH		
<input type="checkbox"/> Pulmonary Hypertension		
<input type="checkbox"/> End Stage Renal Disease (ESRD)		
<input type="checkbox"/> Dyspnea on Exertion	-1 block, probable cause emphysema	

ADDITIONAL PROBLEMS:

Problem:	Comments:	Resolved
<input checked="" type="checkbox"/> Mild global dysfunction; EF 45-50%		
<input type="checkbox"/> Valvular heart disease; mild AI, MR		

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Fig. 24

Title: **COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION**

First Named Inventor: **John M. Flack**

Application Serial No.: / Atty. Docket No.: **MTS 0102 PUS**

22/25

Referral Letter Form

Wayne State University
Internal Medicine

RE: **DOE, JOHN A.**
Med Rec#: **123-12-1234**

Print Letter Close

November 14, 2000

Physician Directory: Append Selected Physician

REFER TO:

Physician Name: Fredrick M Smith MD
First MI Last Degrees (MD, MPH)

Address 1: 123 3rd Ave. Address 2: Suite 4A

Detroit MI 42021 (313) 555-8823
City State Zip Phone Fax Email

Dear Dr. Smith,

I am referring this patient to you for . I have included my visit notes.

IMPRESSION:

Gentleman with ESRD on peritoneal dialysis with HTN of unknown duration. His symptoms of dyspnea on moderate exertion point to the need to screen for systolic and diastolic heart dysfunction and, if systolic dysfunction is present, to consider combined hypertensive and ischemic cardiomyopathy. I suspect that he has some peripheral arterial disease and mild claudication symptoms. He is currently impotent.

Record: 1 of 1 (Filtered)

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Fig. 25

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Title: COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION

First Named Inventor: John M. Flack

Application Serial No.: / Atty. Docket No.: MTS 0102 PUS

23/25

Print Request

Patient: Doe, John

SSN: 123-12-1234

Close

Visit Selected: 01/03/1999

Print Menu

Preview

PDF

Print

Patient History



Review of Systems



Preventive Health / Sleep Apnea



Current Meds Only



Full Medicine List



Visit Vitals / Problems / Complaint



Physical / Impression / Plan



Diabetes Care



Secondary Hypertension Summary



BioZ (plethysmography)



MedTrace Calculated Comments



Print Thank You Letter for Referring Doctor



Print Visit Reports



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Fig. 26

Title: COMPUTER-IMPLEMENTED METHOD AND SYSTEM FOR MANAGING PATIENT
HEALTHCARE AND EVALUATING PATIENT KIDNEY FUNCTION

First Named Inventor: John M. Flack

Application Serial No.: / Atty. Docket No.: MTS 0102 PUS

24/25

MedTrace

File Edit Insert Records Window Add To List Medication Table Treatment Algorithms View Summary Help

Physician Directory

First Name: [Blank] Middle Initial: [Blank] Last Name: [Blank] Degree: [Blank] Address1: [Blank] Address2: [Blank] City: [Blank] State: [Blank] Zip: [Blank] Telephone: [Blank] Fax Number: [Blank] E-Mail: [Blank]

Close

Record: 26 of 95

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Clinical Administrative Report

REPORT PARAMETERS

Physician Provider

- ☐ All
- ☐ Physician A
- ☐ Physician B
- ☐ Physician C
- ☐ Physician D

Age (Years)

- thru
- ☐ All Ages

Time Period

- thru
month month
- thru
year year

Race/Ethnicity

- ☐ All Race/Ethnic Groups
- ☐ White
- ☐ African American
- ☐ Hispanic
- ☐ Native American
- ☐ Asian/Pacific
- ☐ Other

Report Variables

- ☐ % Visits at or Below JNC-VI
- ☐ % Attaining Goal BP
- ☐ Average # of Follow-Up Visits
- ☐ Average Number of Baseline Hypertensive Medications
- ☐ Average # Number of Follow-Up Anti-Hypertensive Medications
- ☐ Average PreTreatment Blood Pressure
- ☐ Average Blood Pressure Reduction From Baseline

Sex

- ☐ men ☐ Women
- ☐ Both

Fig. 28

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